

Encephalartos venetus (Zamiaceae): a new species from the Northern Province

P. Vorster

Botany Department, University of Stellenbosch, Private Bag X1, Matieland, 7602 Republic of South Africa

Received 11 September 1995; revised 7 November 1995

Encephalartos venetus is described from the Northern Province. It resembles *E. cupidus* R.A. Dyer in its glaucous foliage, strongly dentate sub-adult-stage leaflets, glaucous green cones, and the morphology of the micro- and megasporophylls, but differs in being a much larger and arborescent, instead of a more or less acaulescent plant, with entire instead of conspicuously dentate adult-stage leaflets.

Keywords: *Encephalartos*, new species, Zamiaceae.

A critical study of the group of species comprising *Encephalartos cupidus* R.A. Dyer, *E. dolomiticus* Lavranos & Goode, *E. dyerianus* Lavranos & Goode, *E. eugene-maraisii* Verdoorn, and *E. middelburgensis* Vorster (Zamiaceae) led to the conclusion that another undescribed species should be distinguished.

Encephalartos venetus Vorster, sp. nov.

Plantae arborescentes, truncus ad 2 m altus. Folia petiolatissima, manifesta glauca et veneta, interdum spiraliter contorta; foliola ad 200(–270) mm longa et 20(–24) mm lata, in foliolis submaturis in

marginibus ambabus dentatis, foliola matura integra, foliola proximalia non ad aculeis redacta. Strobili veneti, glauci, pedunculati; bullae macrostrobilorum perspicue facetatae facietis centralibus elevatis, faceta plusminusve laevia vel leviter rugosa.

Encephalartos cupido R.A. Dyer folioli marginibus submaturis dentatis, strobilis glaucescentibus et pedunculatis, et bullis similis; sed differt praesertim statura majore, frondibus petiolatissimis vice sessilibus, et foliola matura integra vice conspicua dentata. Strobili *E. dyeriano* Lavranos & Goode similis, sed differt macrostrobilis ovoideis versus cylindraceis, et frondibus petiolatissimis vice fere sessilibus et foliolis basalibus non ad aculeis redacta.



Figure 1 *Encephalartos venetus*: plants in habitat. (a) Specimen on cliff face, showing well-developed trunk, (b) another plant on cliff face, with two female cones. Scale bars = 1 m. Photos: S.P. Fourie.

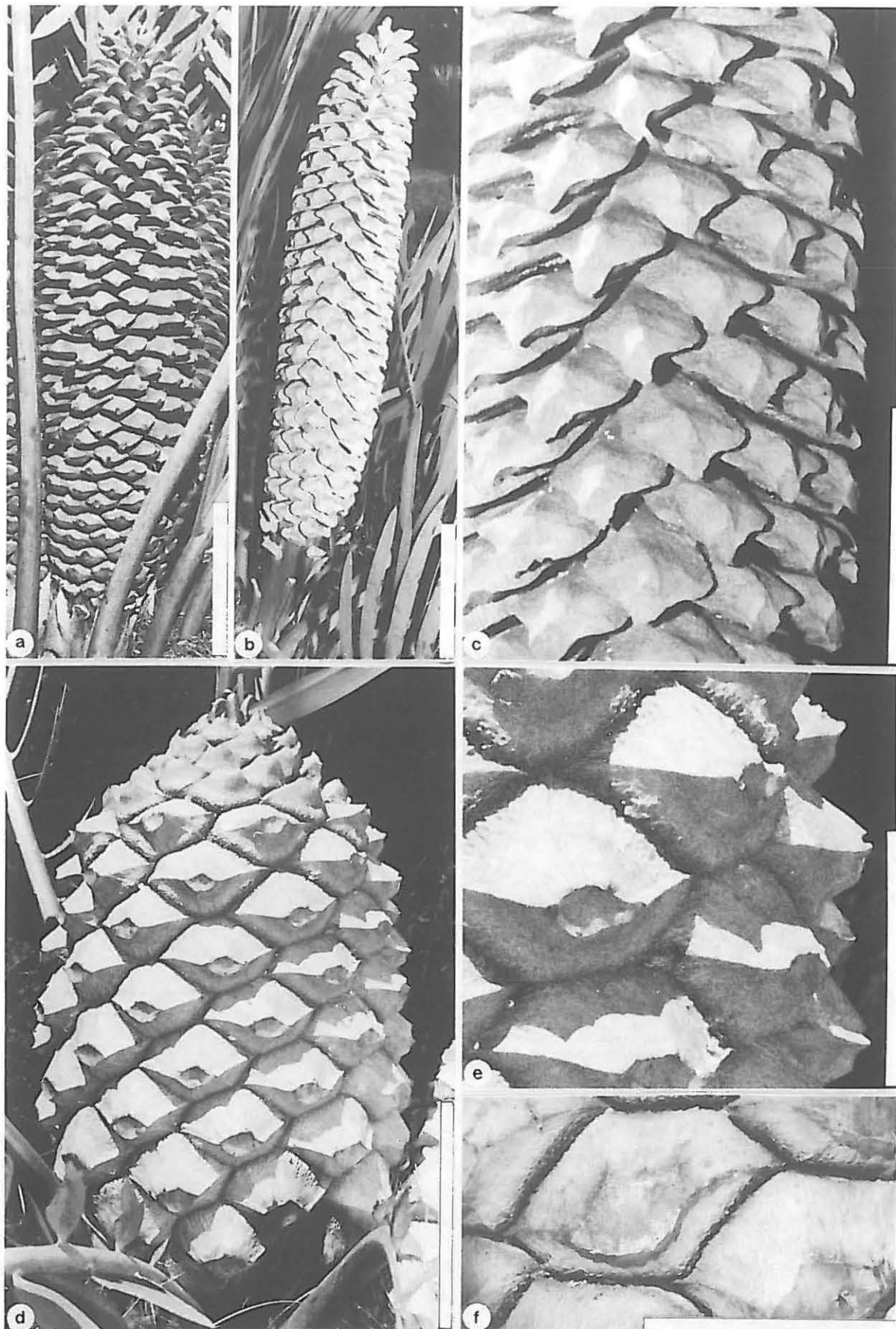


Figure 2 *Encephalartos venetus*: (a) male cone, from Vorster 3014, (b) male cone, from a plant in a private collection, (c) detail from (b) showing exposed faces of microsporophylls drawn out into drooping beaks, (d) female cone, from Vorster 2955, (e) detail from (d) showing relatively small central facets of exposed faces of megasporophylls, (f) detail from female cone of Steyn 318 showing larger central facets of sporophyll faces. Scale bars: a, b, d = 100 mm; c, e, f = 50 mm.

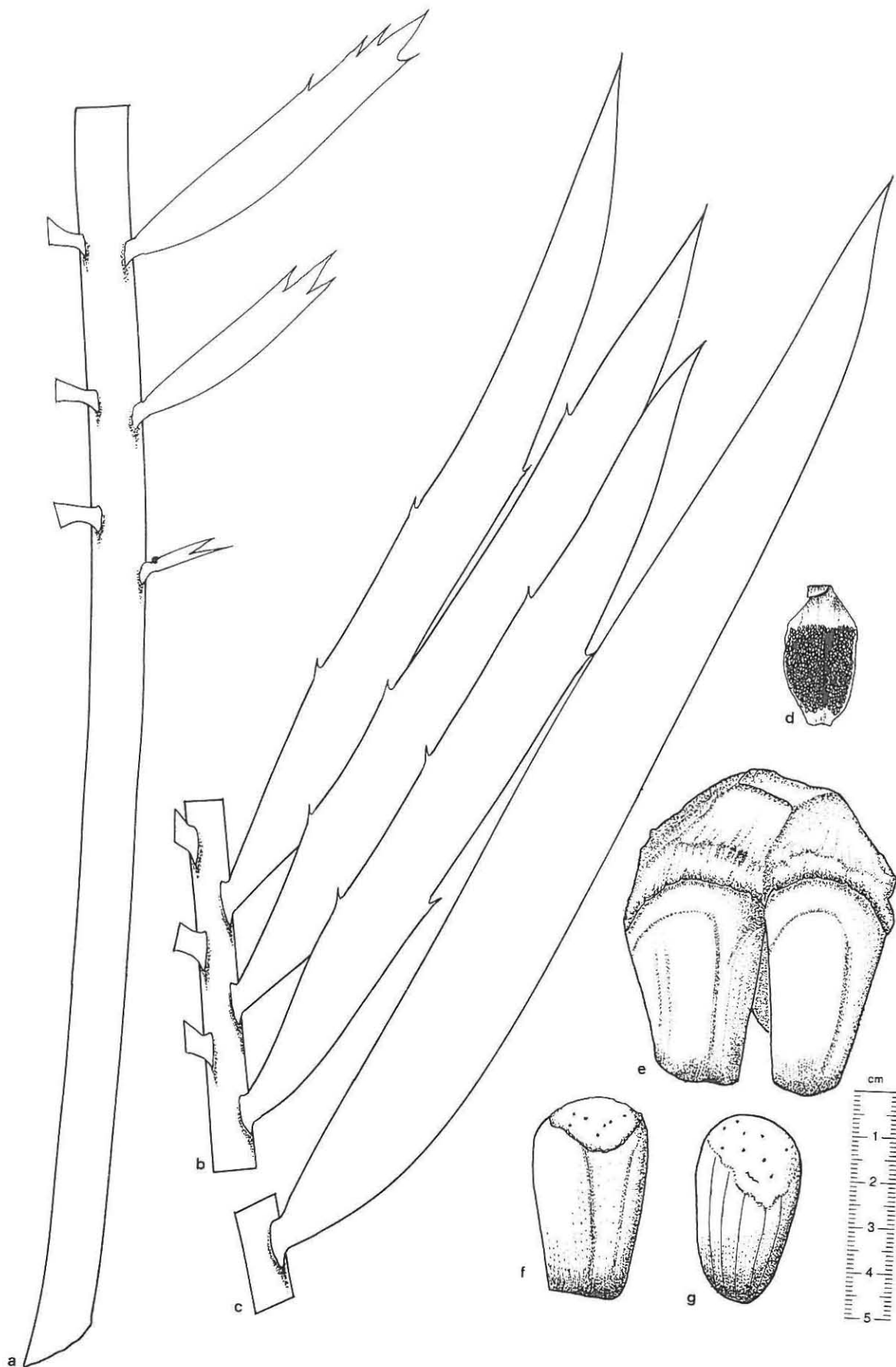


Figure 3 *Encephalartos venetus*: (a) proximal part of leaf showing petiole and progressive reduction of proximal leaflets, (b) subadult-stage leaflets with teeth on both margins, (c) adult-stage leaflet without teeth, (d) microsporophyll in abaxial view, (e) megasporophyll in abaxial view, (f) seed with sarcotesta intact, (g) seed with sarcotesta removed. a, e, f, g from Vorster 2955; b, d from Steyn 316; c, from Steyn 318. Del. E.C. Vorster.

TYPUS.— Transvaal: precise locality kept secret, *Steyn 316* (PRE, holo.; K).

Plants arborescent, solitary or suckering from base. *Trunk* up to 2 m tall (often less?) and about 250 mm thick, covered with leaf bases. *Leaves* numerous, spreading, more or less straight, glabrous, glaucous, rachis often (but not invariably) twisted; petiole up to 350 mm long; proximal leaflets progressively reduced towards base of leaf but only lowermost 1 or 2 reduced to spines; median leaflets directed towards apex of leaf at angle of about 45°, opposing leaflets almost folded together (with angle of 45° or less between them), incubously overlapping, both margins conspicuously dentate and apices pungent when plants sub-mature but entire in mature stage, 200–170 mm long and 20–24 mm wide. *Male cones* up to 4, cylindrical, 280–400 mm long and 85–110 mm across, on short stalks 70–85 mm long, glabrous, glaucous; exposed faces of microsporophylls drawn out into drooping beaks towards central facets, other facets not demarcated. *Female cones* up to 2 observed, sessile, ovoid, about 300 mm long and 180 mm across, glabrous, glaucous; exposed faces of megasporophylls more or less smooth or very slightly wrinkled but with well-defined facets, pyramidally raised towards central facet which is usually less than $\frac{1}{3}$ the horizontal diameter of exposed face of sporophyll; seed with bright red (not orange) sarcotesta, about 38 mm long and 24 mm across with sclerotesta removed. (Figures 1–3).

Variation

In spite of the large-scale removal of plants from nature, no large plants have been encountered in cultivation; all the specimens seen had trunks not exceeding 500 mm in length. Most of these specimens had leaflets characteristically dentate on both margins (Figure 3b), not unlike *E. cupidus* R.A. Dyer. Many of these plants have already coned and can therefore be considered to be mature, but probably still represent the sub-adult stage in which the foliage characteristics are still those of the juvenile stage (manifested in spinescence of the leaflets). In female cones, the central facet of the megasporophyll is usually conspicuously small, less than $\frac{1}{3}$ the horizontal diameter of the exposed face of the sporophyll (Figure 2e). *Steyn 318* (PRE), plus photographs taken in the habitat (cf. Figure 1a) by Mr S.P. Fourie, suggest that plants attain a trunk length of up to 2.5 m, and that the adult-stage leaflets are entire (Figure 2c). In the female cone of *Steyn 318*, the central facet of the exposed sporophyll face is markedly larger, almost $\frac{1}{2}$ the horizontal diameter of the exposed face (Figure 2f). I have no reason not to include this material in *E. venetus*.

Affinities and diagnostic features

E. venetus closely resembles *E. cupidus* (Dyer 1971b) in its glaucous foliage, toothed leaflets (in its sub-mature stage), and the morphologically similar female cones; but differs in being a much larger plant of arborescent habit, and with the exposed faces of the microsporophylls drawn out to a much greater extent into a beak-like structure. The mature-stage leaflets are mostly entire, and conspicuously large. The impression gained was that the cones of *E. venetus* are more glaucous (hence the specific epithet) and very slightly wrinkled, compared with the dark green and smooth cones of *E. cupidus*.

As in *E. eugene-maraisii* Verdoorn (Dyer 1965), *E. middelburgensis* Vorster, Robbertse & van der Westhuizen (Robbertse *et al.* 1989), and *E. dolomiticus* Lavranos & Goode (cf. Robbertse *et al.* 1988b), there is a well-developed petiole, but *E. venetus* differs from these species in its glaucous green, glabrous cones. As in *E. dolomiticus*, the rachis of the leaf is sometimes twisted.

The female cones resemble those of *E. dyerianus* Lavranos & Goode (cf. Robbertse *et al.* 1988a) and *E. inopinus* (Dyer 1971a) in the more or less smooth-faceted, moderately raised, exposed faces of the sporophylls and the glaucous green pigmentation, but in the male cones, the exposed faces of the sporophylls are drawn out into beak-like structures instead of being only slightly raised.

Phenology

In its natural habitat, disintegrating female cones were observed in mid-June (*Steyn 318*), which is earlier than expected; but in cultivation in Pretoria, female cones only started falling apart towards the end of September. In June, the male cones in habitat had already dried out, and observations on cultivated plants in Pretoria and Stellenbosch suggest that the cones appear in mid-December and shed the pollen between mid-January and mid-April. It is not certain to what extent regeneration from seed takes place in nature, but taking into account the dryness of the habitat, it can be surmised that the seeds germinate towards mid-summer, at the height of the rainy season, rather than staying dormant until the following summer. In cultivation, fertile seeds have been produced following hand pollination.

Geographical distribution and habitat

E. venetus occurs in the Northern Province Drakensberg (Figure 4). Due to its restricted distribution and the low number of individuals remaining in nature, the precise locality is not revealed. It has been reported to occur in low, open woodland, on cliff ledges, in direct sunlight (Figure 1).

Conservation status

This is yet another species of the former Transvaal which seems to be on the brink of extinction. Very few specimens remain in nature, and these occur widely scattered, even though the total distribution as known at present is fairly restricted.

Note

A specimen from the same general area as the type collection (*Zunckel 20*, PRE!) superficially resembles this species, but its leaflets differ in having corrugated abaxial surfaces, like *E. paucidentatus* Stapf & Burt Davy. It is considered prudent to withhold judgement on its affiliation until more material can be studied in the field.

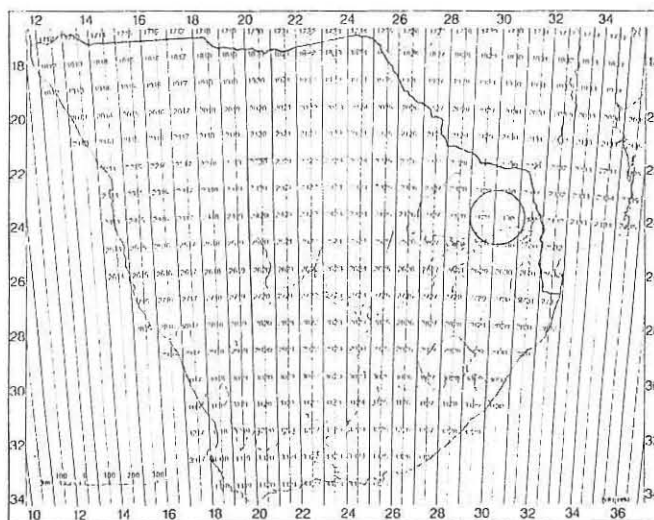


Figure 4 *Encephalartos venetus*: known geographical distribution.

Material studied

A number of live specimens were collected and distributed to growers in the early 1970s under the name *Encephalartos dolomitica*, several years before this trade name was adapted to *E. dolomiticus* by Lavranos & Goode (1988). Several of these were studied, and the reader should not be misled by the fact that only two specimens with collecting data are cited:

— Locality withheld, *Steyn 316* (including microsporophylls – type) (K, PRE); *Steyn 318* (including megasporophylls) (K, PRE).

— Without collecting data, specimen from author's living collection in Stellenbosch, *Vorster 3014* (including microsporophylls) (PRE!); Cultivated specimens without collecting data, *Vorster 2955* (including megasporophylls) (PRE), *Vorster 2958* including megasporophylls) (FTG, K, MO, PRE).

Acknowledgements

The co-operation and assistance of the Transvaal Chief Directorate of Nature and Environmental Conservation is gratefully acknowledged. In particular, I am grateful to Mr S.P. Fourie for arranging collection of the type material and photographing a plant in habitat, and to Mr J.C. Oosthuizen for logistic support

and companionship during a field expedition while he was in the employ of that organization.

The continuing research, of which this paper is a result, is financed by the University of Stellenbosch and the Foundation for Research Development.

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